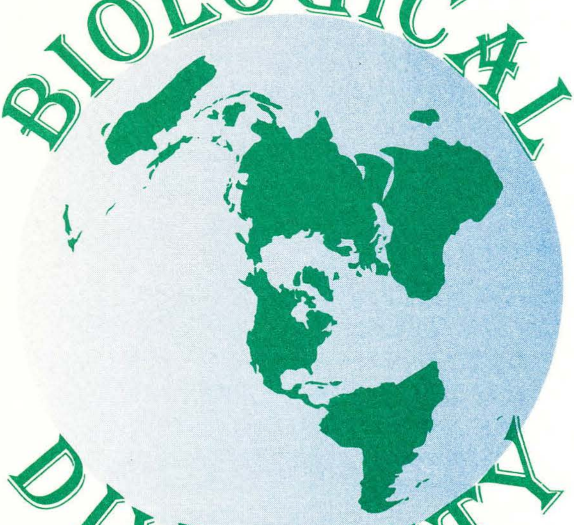
THE PHILOSOPHY, POLITICS AND SCIENCE OF

BIOLOGICAL DIVERSITY



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ORIGIN OF ENVIRONMENTALISM AND THE BIODIVERSITY CONFLICT

New concepts to protect our environment and natural resources have dominated environmental policy in increasing measure since the late 1980s. The flagship of these new concepts is biological diversity, or biodiversity as it is more commonly called. Although biodiversity is not new to scientists, never before have these concepts been used in this manner.

Concepts of biodiversity literally exploded into the American and global political/scientific arenas like the German blitzkriegs during World War II. How did this concept go from almost total obscurity to global policy in less than seven years? And like the German blitzkriegs, why do those who promote biodiversity seem to have such a militant approach to force its application into law? What is biodiversity and where did these concepts come from?

A Militant Viewpoint

As late as the mid-1980s, only a small group within the scientific community — called conservation biologists — were aware of these emerging concepts. Seemingly out of nowhere, this group took a very militant stand against traditional and proven conservation science. In the first volume of the journal of *Conservation Biology* published in 1987, Michael Soulé, co-founder of the society, asserted that only "by joining together [those who are wise can] the worst biological disaster in the last 65 million years be averted." How? By treating "environmental wounds inflicted by ignorant humans and destructive technologies...by wiser humans."[1]

In the textbook of *Conservation Biology*, Soulé described conservation biology as a "crisis discipline" that is at war. As on any battlefield, he declared, "if you observe a group of armed men stealthily approaching your lines, you are justified in taking precautions, which may include firing upon the men."[2] With this hostile view of traditional science, conservation managers and scientists, Soulé and other conservation biology leadership began an all-out effort to implement their ideas.

Soulé and his colleagues believed that conservation theories could not languish in the mental halls of academia — where they really belong — but instead must be pushed to the forefront of politics where they can be used in formulating policy.[3] The opening salvos of this effort were the well-funded efforts by environmental groups and conservation biologists to file lawsuits and lobby for new laws and regulations in the late 1980s and 1990s.

By the late 1980s they were being forced into law and were the centerpiece of numerous lawsuits across the country. The perceived destruction of biodiversity by traditional conservation practices became the rallying cry of environmentalists and many conservation biologists across America.

By the early 1990s biodiversity became a household word and was the centerpiece of numerous lawsuits against the US Forest Service and other public agencies. Along with sustainable development, biodiversity was at the heart of the United Nations Conference on Environment — the Earth Summit — held in Rio De Janeiro in June of 1992. By 1993 the United States had signed treaties committing us to protecting biodiversity at any cost.

According to Soulé, much of the basis behind the theories of conservation biology came from the biocentric and mystic philosophies of John Muir, Emerson, and Thoreau. To determine what this means, we need to turn back a couple of decades to a phenomenon called the new age counterculture movement. Within this movement was born a new, yet a very old theology of nature. One in which nature knows best.[4]

These nature-knows-best theories have bypassed the normal scientific validation process. Do these new age theories of biodiversity and sustainability reflect true natural law, or are we building environmental policy on myth?

Conservation Biology

Back in the late 1970s and early 1980s new age counterculture leaders graduated from college and joined society. While they abandoned their street rioting, they did not abandon their militant beliefs. They realized that if they were going to be successful they had to develop a science to support their beliefs. Among others, that science evolved into what is now known as conservation biology.[5] As noted above, Michael Soulé, co-founder of the Society of Conservation Biology, used the same military analogies to express the war conservation biology was fighting as were used in the riot-torn streets and campuses of the 1960s and 1970s in order to avert "the worst biological disaster in the last 65 million years."[6]

Central to the "nature knows best" set of theories was that of island biogeography. First postulated in 1967 island biogeography is a set of theories of how population and genetic dynamics are affected when stressed on isolated islands in the South Pacific. The theory postulates that—like isolated islands separated by oceans—forested ecosystems that are separated or "fragmented" by "oceans" of cut-over land, housing tracts, parking lots and roads are therefore isolated from each other.[7]

Since its conception island biogeography has been promoted by the International Union for the Conservation of Nature (IUCN) which has spawned a host of conservation strategies designed to manage plant and animal populations, including conservation biology and biodiversity concepts.

"Sustainability," the IUCN would later state, "calls for a *fundamental transformation in how people behave*. Changes in behavior can be assisted by laws and incentives...but the changes will last only if they arise from...a new moral conception of world order."[8] (Italics added) At the heart of the effort to define this new morality was the emerging science of conservation biology and its host of unproven theories.

According to these theories, habitats fragmented by heavy harvesting, roads, and other human development jeopardize some species populations in isolated habitats, preventing the free movement of species and the exchange of genetic material. This, in turn, theoretically threatens the diversity of species and hastens the extinction of vulnerable species. To prevent this, conservation biologists generally maintain that corridors and reserves must be created to allow genetic material for each species to flow in and out of natural habitats thereby protecting populations by protecting the full range of genetic variation.

To those people and scientists that believe in the esoteric dimensions of nature, the above theology and theory lead to only one conclusion — ecosystems, nature, and the earth herself are being destroyed by man's activities — today, right now. The theology and theories leave no alternative. Fragmentation must be stopped and ecosystems protected by a reserve and corridor system before it is too late. There is no time to wait for science to provide more definitive answers.

Remains Invalidated by Science

In spite of the ethical warm fuzzy feelings these theories provide, they have not been sufficiently validated — even in a true 'island' context. There is no evidence to suggest that urbanization and forest clearcutting function the same ways as oceans do in creating fragmentation.

It requires a tremendous leap of faith to take theories developed for South Pacific Islands and apply them to mosaic forested landscapes in America. Scientists have cautioned: "The equilibrium theory of island biogeography and associated species area relations have been promoted as theoretical bases for design of nature reserves. However, the theory has *not* been properly validated and the practical value of biogeographic principles for conservation remains unknown. Recent studies have shown that species-area data in the absence of autecological basis [cause and effect relationships] *provide no special insights* relevant to conservation."[9] (Italics added)

These conclusions have changed little in recent years. In December 1992 numerous criticisms of the need for reserves and corridors were summarized in an article published in *Conservation Biology*. The article notes that even when the IUCN was popularizing island biogeography and the need for reserves, "the theory was increasingly heavily criticized...as inapplicable to most of nature, largely because local population extinction was not demonstrated."[10]

In regard to other conservation biology theories, these same authors note that "no unified theory combines genetic, demographic, and other forces threatening small populations, nor is there accord on the relative importance of these threats."[11] Even inbreeding depression has not been demonstrated to endanger populations in natural systems.[12]

The theory that "natural corridors" enhances the free movement of species between reserves is on equally shaky ground. First formulated in the mid-1970s, this concept, "along with other principles of reserve design, have been quoted in policy documents and textbooks, despite being supported by few empirical [real] data at the time, and being subject to considerable debate since.... There have been relatively few studies that have shown that corridors are actually required for movement. Studies that have been frequently cited as illustrating corridor use for faunal movement, do not, in fact, provide clear evidence."[13]

Most reported observations of corridor use are very ambiguous. Another article makes the observation that "there are still few data, and many widely cited reports are unconvincing."[14] Of the 36 contributions in a recent conference proceedings on this topic, only five presented new data on animal movement, and three of these concluded that corridors may be unimportant.[15] Of those that do support the need for corridors, wooded fence-rows are adequate for many species, while only a few require well-vegetated strips.[16]

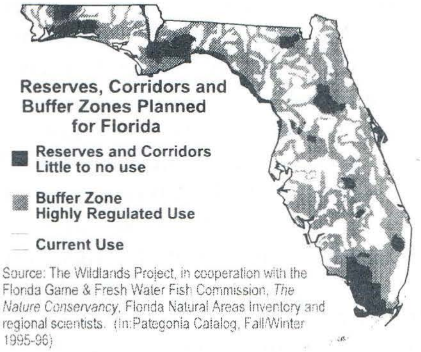
So although many, if not most, conservation biologists *assume* that reserves and corridors protect populations and genetic material of species, there is almost no actual evidence to support the theory. In spite of this, those who promote these theories treat them as either fact, or proclaim that in the face of uncertainty it is better to be safe than sorry.

Most scientists do not agree, however. One group of scientists cautions: "Given the attention paid in recent conservation literature to threats to small populations, it might seem that any small, isolated population is doomed in the short term. Many go extinct.... But many small populations persist and cannot easily be dismissed as recently-reduced populations en route to extinction."[17] In other words, it remains highly speculative that small populations are prone to extinction.

Because of the normally high socioeconomic impact of these corridors, many scientists discount the notion that corridors "can't hurt." Instead they present arguments that corridors must be evaluated on a case by case basis.[18] If a reserve or corridor is deemed necessary it must be justified on its own merits, and targeted to individual species whose needs are documented. At the same time they caution that it is unlikely the current interest in corridors will abate unless there is hard evidence they are definitively ineffective.[19]

Being "safe" by setting aside vast tracts of reserves and corridors also carries a high risk of creating an ecological disaster. Research in Holistic Resource Management has conclusively shown that for brittle environments (arid, seasonal precipitation, cold, etc.) which occupy over half the world, long-term protection will result in enormous loss of biodiversity and ecosystem health. In case after case where Western U.S. rangelands were protected from overgrazing, the protected ecosystems first responded by increasing the number of species and their relative health. This apparent recovery, however, was quickly followed by a decline in species complexity and health until the protected ecosystems were in far poorer health than the overgrazed lands. In some cases, the protected ecosystems turned into deserts.[20] "In many cases," notes Dr. Allan Savory, "where we hoped rest [protection] would cure problems it has only exacerbated them."[21]

Just the Beginning


Reserves, Corridors and Buffer Zones Planned for Florida
■ Reserves and Corridors Little to no use
▨ Buffer Zone Highly Regulated Use
Current Use

Source: The Wildlands Project, in cooperation with the Florida Game & Fresh Water Fish Commission, *The Nature Conservancy*, Florida Natural Areas Inventory and regional scientists. (in Pategonia Catalog, Fall/Winter 1995-96)

Figure 1. In spite of a lack of scientific need for reserves and corridors, the State of Florida is now planning to buy up to 12 million acres to implement the Wildlands Project to protect the panther. *Science*, 260 (June):1868-1871, 1993.

In spite of the lack of hard scientific evidence to support the need for reserves and corridors, and the high risk of making matters worse, some states are spending huge sums of money to purchase easements and fee titles for reserves and corridors. But according to these conservation biologists even more draconian action must be taken if we are to preserve ecosystems and save the earth.

At the 1993 annual meeting of the Society of Conservation Biology, Michael Soulé (co-founder and President of the Society), Reed Noss (editor of the journal *Conservation Biology)*, and David Foreman (founder of *Earth First!*, Board Member of the Sierra Club, and promoter of terrorist activities such as ecotage), proposed locking up or severely restricting use on half of the land area of the United States in reserves, corridors, and human buffer zones.

Called the Wildlands Project, an article in *Science* magazine exposes the incredible scope and magnitude of this effort:

> [The plan] calls for 23.4% of the land to be returned to wilderness, and another 26.2% to be severely restricted in terms of human use. Most roads would be closed; some would be ripped out of the landscape. The plan does not specify what would happen to the nearby inhabitants. . . . In fact, the long-term goal of the Wildlands Project is nothing less than a transformation of America . . . to an archipelago of human-inhabited islands surrounded by natural areas. It is, said ecologist Reed F. Noss, . . . 'a vision of what this continent might look like in 200 years if we can reduce the scale of human activities'" [22]

This plan would forcibly relocate millions of people in the vague hope of maintaining and enhancing biodiversity. Noss claims that a minimum population of 1000 grizzly bears, wolverines and wolves would require 242, 200, and 200 *million acres* of reserves, respectively! [23] To give a perspective of this size, Oregon, Washington, Idaho and Montana equals about 250 million acres. Maine, New Hampshire, Vermont, New York, Massachusetts, Rhode

Island and Connecticut is 71 million acres. About 11 million people live in these states.

Individual reserves would range from 10,000 acres to millions of acres, and corridors would average from thousands of yards to more than ten miles wide. Human buffer zones would range from light selection harvesting, primitive camping and road density no more than 0.5 miles per square mile of land near the reserves and corridors, to campgrounds and severely limited development farthest away from the reserves and corridors.[24] Examples of what this might look like in different regions of the United States are found on pages 16-17.

Rational conservation biologists would disagree with this plan. Nonetheless, Article 8a-e of the UN/IUCN sponsored Convention on Biological Diversity (i.e. the Biodiversity Treaty) establishes the legal framework for this concept. Had the treaty been ratified by the U.S. Senate, emerging science refuting these theories could not have been used to halt the implementation of this effort. Just like is found in most environmental literature, the Preamble of this UN treaty stated, "Lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize threats to biological diversity." [25]

The Biodiversity Treaty

The actual Biodiversity Treaty was only an outline framed in glowing language that provided little in the way of substance for analysis. Article 25 of the treaty mandated a scientific assessment that would provide the basis for the implementing language, *after* the U.S. Senate ratified it! In essence, the Senate would be signing a blank check.

It was not until the draft United Nations Global Biodiversity Assessment (GBA) was written in the summer/fall of 1994 that the incredible magnitude of this treaty became clear. The United Nations had commissioned three highly controversial global environmental organizations to oversee the write the GBA; the World Resources Institute (WRI), the IUCN, and the World Wildlife Fund (WWF), now known as the World Wide Fund for Nature.

The IUCN and its sister organization the WWF had been promoting reserves and corridors for nearly fifteen years and it was expected that they would select the Wildlands Project as the primary means of protecting biodiversity. As anticipated, Section 10.4.2.2.3 of the draft GBA specifically identified the Wildlands Project as the template to conserve biodiversity on a local, national and global level. Section 10.5 defines the need for "relocation" of citizens outside of reserves over a twenty to fifty year period.

In addition, these NGOs (Non-Governmental Organizations) gave themselves enormous powers equal to those of member nations: "The law should clearly establish conditions of participation. . . for conservation NGOs. Legal standing is necessary for NGOs" to ensure:

(i) "Governments do not issue regulations or permits against the law."

(ii) "Proper assessment and consultation procedures have been followed."

(iii) "Proceedings may be brought against offenders."
(iv) "Monitor compliance deficiencies." [26]

Since ecosystems cross state and national boundaries, the GBA mandates that zoning and enforcement will be set at the bioregional level by appointed commissions: "Shift biodiversity conservation and biological resources management to higher, regional-level scales. Within the region will be found the basic social and commercial services that serve the communities of the region.... The lands will be administered under a mixture of central or local government, private, community and communal tenurial rights.... Within protected areas for in-resident use...resource management plans developed and implemented cooperatively between local communities, governments and non-governmental organizations (NGOs)." [27] It is disturbing that under the treaty, NGOs would be partners with government in deciding resource management plans, while *landowners* would have no voice.

The United States Senate was ready to ratify this incredible treaty in August and again in September, 1994. Only the simultaneous delivery to the Senate of the draft GBA Section 10 and a series of maps (see pages 16-17) depicting the probable impact of The Wildlands Project, along with a flood of citizen call-ins protesting the treaty stopped the ratification process hours before the vote was taken. Incredibly, the United Nations insisted the GBA did not exist — even after Section 10 was delivered to the Senate!

That such a treaty was nearly ratified is very troubling since it invokes what is known as the Supremacy Clause of the U.S. Constitution: *"All treaties made or Which shall be made, under the authority of the united states, Shall be the supreme law of the land; and the judges in every State shall be bound thereby, any thing in the constitution or Laws of any state to the contrary notwithstanding."* (Article VI) In application, the Supremacy Clause mandates that state and federal judges interpret litigation cases in the context of the treaty, not existing state or federal law.

Environmental groups have been extremely effective at both lobbying for new legislation and using litigation as a tool for changing environmental law without the consent of Congress or State legislatures. Interestingly, the minutes of a closed-door combined meeting of major environmental groups in the Sierra Club offices in Washington DC on July 20, 1993 noted they would deliberately not raise such issues before ratification, but would use these tools after the treaty was ratified:

> The general feeling was that environmentalists shouldn't interpret the treaty too aggressively before ratification.... It should be possible to frame the government interpretation of the Convention so that no new legislation is needed now, but the question could be revisited in the future.

In other words, environmental leadership planned to use the treaty to circumvent, or mandate revision of current law, to make nature America's central organizing principle.

Sustainability

As noted above, the key in protecting biodiversity is to manage nature in ways that are sustainable. This is a winning premise. After all, who could be against sustainability? But what does sustainability mean? Therein lies the heart of the entire biodiversity debate. For those who believe that nature knows best, anything man does to nature must, by definition, reduce sustainability.

Consequently, there are some conservation biologists who argue that forest clearcutting, farming, or the creation of golf courses are not sustainable. Since man created them they are therefore artificial and unsustainable. In the 1992 annual meeting of the Society of Conservation Biology, one conservation biologist proclaimed that we don't even know the serious ramifications of harvesting a single tree in the forest! Consequently, we should not permit *any* harvesting. While this represents an extreme example, it is not that unusual.

This nature-knows-best version of sustainability is at the heart of the IUCN's historical efforts to promote island biogeography and conservation biology. The United Nations, with which the IUCN is indirectly affiliated, commissioned a report defining sustainability and how it could be achieved globally.

The Brundtland Report

The Bruntland report was issued in 1987 and has become known as the Brundtland Report, named after its chairperson, Norwegian Prime Minister, Gro Harlem Brundtland. Officially it is titled *Our Common Future*. The report defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Even though there are problems with this definition, to a greater or lesser degree, this definition represents most people's vision of sustainable development.

It is this definition that most people conceptualize when some conservation biologists and environmentalists claim that traditional conservation practices are not "sustainable." But there are actually two definitions, the one above, and the one developed by the IUCN shortly after the Brundtland Report was issued. It is critical for Americans to understand the difference.

The IUCN Definition

Many in the United Nations believed the Brundtland definition provided too much leeway for man to continue his exploitation of nature. So the IUCN, in collaboration with the United Nations Environmental Programme and others "set out to prepare a second version...[which] put special emphasis on the need for a 'world ethic of sustainability' and the *transformation of human attitudes and values*."[28] (Italics added) The plan was to define sustainability in a way that "calls for a *fundamental transformation in how people* *behave.*"[29] (Italics added) The goal then of the IUCN is to radically transform how Americans will be allowed to behave. To do this, the IUCN International Ethics Working Group was formed in 1987. They defined sustainable as:

> "Sustainable," by definition, means not only indefinitely prolonged, but nourishing, as the earth is nourishing to life and the self-actualizing of persons and communities. The word "development" need not be restricted to economic activity,. . . but can mean the evolution, unfolding, growth and fulfillment of any and all aspects of life. Thus "sustainable development," may be defined *as the kind of human activity that nourishes and perpetuates the fulfillment of the whole community of life on earth.*[30] (italics' original)

This definition, claim its authors, is far more biocentric than the original Brundtland Report and follows the mystic traditions of Albert Schweitzer and Aldo Leopold: "In a biocentric approach, the rights of nature are defended first and foremost on the grounds of the intrinsic value of animals, plants, rivers, mountains, and ecosystems rather than simply on the basis of their utilitarian value or benefit to humans." [31]

Without going into the entire "new age" interpretation of this definition, self-actualizing means the metaphysical realization of one's own god-potential or inner divine nature, and evolution does not mean biological evolution, but the evolution of rocks to humans through reincarnation. The IUCN's effort to push conservation biology into policy is centered in this rather mystic definition of sustainability. Heavy stuff, this version of sustainability. Yet, this hidden definition provided the foundation of the 1992 Earth Summit in Brazil, and is at the heart of claims that current conservation practices and uses are not sustainable. Hence, the need for the Biodiversity Treaty and the Wildlands Project.

Rural America is feeling the brunt of this kind of mystic definition. But such attacks are also occurring against golf courses and almost any new development in suburbia. As noted earlier, many urbanites and suburbanites have been mislead by this pseudoscience and support environmentalist efforts out of a real concern to protect the environment. Not because they believe this esoteric definition of sustainability, but because they are being *told* traditional conservation practices are not sustainable. Therefore, it is imperative that "sustainable" always be fully defined. Two parties can spend hours discussing conservation practices using words that have radically different meanings to each.

Biodiversity

No one argues the importance of biodiversity. The shortcomings of monotypes and the need for having mixed forests have been discussed and known long before biodiversity became a buzzword. Yet the current concerns by conservation biologists about biodiversity center on many of the same theories used to support the need for reserves and corridors — and are subject to the same criticisms.

At the heart of biodiversity is sustainability. Conservation biology concepts of sustainability and biodiversity reinforce each other. In order to maintain biodiversity, sustainable practices must be employed. Conversely, to have sustainability, biodiversity must be maintained or enhanced. Any one who uses this approach has a winning argument that has been historically impossible to effectively develop a counter argument.

That such an argument has been so successful is no accident. Some conservation biologists are taught in college to use this argument. In the concluding chapter of the college textbook *Conservation Biology*, Arne Naess — often considered the father of the deep ecology movement and biocentric concepts — laid out an unbeatable strategy redefining environmental morality using biodiversity.

This strategy consisted of two parts. The first was to use emotion to glorify the "intrinsic value of the richness and diversity of life on the planet Earth," in the same manner that "hundreds of wars . . . [have been] glorified by reference to God, patriotism, love of mankind, and supreme justice." The second was for "experts and scientists to repeatedly and persistently deepen their arguments with reference to basic *value judgments and philosophy of life*."[32] (Italics added)

Note the instructions were to use their philosophy of life, *not science*, when developing their argument. When making these arguments, these so-called scientists must do so in the "most comprehensive time and space frame of reference — ultimately in terms of millions of years of evolution and intimate global interactions."[33] If the conservation biologist is willing to forgo ethics and science, and center arguments on their personal philosophies of "intrinsic values of the richness and diversity of life forms," Naess claims that no one will be able to oppose them. So far that is exactly what has happened.

Another reason Naess's strategy has worked so well is because it is targeted solely against those who live in rural cultures. Naess and others fully recognize they could not achieve success if they started with suburbanites, whose culture Naess believes is totally unsustainable, but who also carry political clout.[34] In order to achieve success, Naess believes that people living in rural areas must "follow a norm of forced *status quo* in terms of their degree of unsustainability, that is, a forced limitation on their self-determination in these matters." (Italics original) Such a course of action, Naess claims, "would protect [urbanites and suburbanites], so that they would not have to go through a severe period of transition toward sustainability."[35]

In other words, those who live in rural economies must not be allowed to attain the standard of living attained by their suburban brethren. Those activities required to achieve it are not sustainable — at least not according to their definition. Not surprisingly, Naess doesn't believe that even current rural economies are sustainable. The difference between urban and rural unsustainability is merely a matter of degree. Rural unsustainability is likely based on the current practices of timber harvesting, winter snowmobiling/skiing, lake development, as well as intensive agricultural practices.

There is little doubt that the scientifically invalidated *philosophies* of biodiversity and sustainability are being used by a minority of powerful people to force American's to accept the "new age" view of reality. They are being given exposure and credibility by big money and influence, and by scientists who innocently see this as a new tool to investigate ecosystem dynamics. But where did this new ideology come from and why does it have such power?

A New Theology of Nature

The counterculture new age movement literally exploded onto the American scene in the 1960s and 1970s. At the heart of the drug use, riots, and protests was a new belief system centered in Pantheism. Pantheism is the foundation of all of the eastern mystic religions and is the belief that all matter, living and nonliving, is god. Other aspects of this belief system are the theology of reincarnation, metaphysical psychic power, and the eventual understanding that a believer has the wisdom of god itself.

This belief system closely resembles Vedic Hinduism, with Brahmanism, Buddhism, and Greek/Celtic mysticism mixed in. Goddess worship is making a big comeback after being absent in the Western world for thousands of years.[36] Rooted in the mystic eastern beliefs of Muir, Emerson, Thoreau, and others, this new theology took a more militant form when what is known as theosophy was introduced into America during the counterculture/new age movement of the 1960s and 1970s.

The radical hippies of that era are now lawyers, news reporters and editors, bankers, doctors, environmental leaders and other white upper middle-income Americans. In other words, they have been assimilated into mainstream America, and though they make up only about 9 - 15 percent of the adult population, they have huge political and economic clout.[37] From a fundamentalist perspective, this view of reality differs radically from the beliefs prevailing in America as little as two decades ago. While no one disputes any individual or group their right to believe what they may, Americans have the right to understand why traditional values are being attacked by these beliefs.

Because this belief system holds that everything is god, nature is also god and is sacred. For some, this belief extends to the idea that the entire cosmos is alive and conscious. Everything from cosmic dust to enlightened man contributes to the wisdom and knowledge of god. The earth and the universe are highly interconnected in what is expressed as the web-of-life.

Though all adherents may not personally believe in it, the basic theology includes reincarnation. In this view of reality, dirt, rocks and water will evolve eventually into man through reincarnation. Man, in turn, can become endued with super god-wisdom and power. There is a sacred responsibility of these higher evolved humans to protect the rights of the lower entities and beings such as rocks, trees, viruses, animals, and their interconnections.[38]

Since nature is interconnected, conscious, and sacred, nature must therefore "know best." According to these beliefs, earth has evolved this complex set of interconnections within and between ecosystems that are essential if planet earth is to survive. Throughout the millennia nature has developed and established this complex diversity of life into the delicate and balance web-of-life that existed until the time western civilization began to destroy it several hundred years ago. To those that believe in this neo-pantheistic religion, this assault on nature has taken on gargantuan proportions during the twentieth century.

It was this belief that formed the basis of the attack by the counterculture and its flower children on American civilization 20 to 30 years ago. It still prevails today and has led to the concepts of conservation biology, sustainability, and biodiversity. And, because urbanites and suburbanites no longer understand the complexities of rural living, they can be easily convinced the unnatural activities practiced by their rural cousins are destroying diversity and sustainability of farm and forest land.[39]

Inroads into Environmental Leadership

Although this belief ranges from a casual acceptance to fundamental dogmatism, it is prevalent in the thinking of many, if not most, environmental leaders. For instance, Jay Hair, president of the National Wildlife Federation formed a partnership in 1990 with Windstar, a new age organization in Colorado, to do the training of the Federation's staff. The purpose of Windstar is to "integrate earth, mind, and spirit."[40] Jay Hair was also chairman of the International Union for the Conservation of Nature (IUCN) until 1996.

The Sierra Club has published twelve nature and natural philosophy books to "explore what it means to be a part of a universe that is alive" and "enchanted."[41] These books explore pantheism, Gnosticism, mysticism and goddess worship as the basis for conservation and sustainable ethics.

The World Wildlife Fund (WWF), now the World Wide Fund for Nature, was created by Prince Philip in 1961 to help finance the IUCN. Philip is an ardent Malthusian who also publicly supports many of the new age and deep ecology ideologies discussed above.[42] Tragically, such thinking is not unique within environmental leadership.

The National Resources Defense Council published an article in its January, 1993 *Amicus* journal that demanded that "the next phase of scientific development will require above all the insight of shamanic powers." (In case you have forgotten a shaman is a medicine man, witch doctor or wizard.) Only when we do this, the article claims, can the earth and universe "celebrate themselves... in a special mode of conscious self-awareness."[43] According to this thinking, the scientific method can no longer be tolerated. Instead it should be replaced with mystic pseudoscience.

These nature-is-god philosophies lead to the belief that the human population on earth is unsustainable, especially the lifestyles of the industrial nations. Science and technology have supposedly permitted humanity to override earth's natural system which is causing them to collapse. The only way to ensure sustainability, according to this philosophy, is through the preservation of biodiversity and the reversion to a much simpler lifestyle.

Mystic Power and Politics

With the help of the WWF and the WRI, both the concepts of biodiversity and sustainable development have been politicized by two institutions: The Environmental Grantmakers Association (EGA) and the International Union for Nature and Natural Resources (IUCN). Although they have almost single-handedly provided the political and financial muscle to advance the biodiversity and sustainability agendas, most people have never heard of them.

The Environmental Grantmakers Association

The Environmental Grantmakers Association (EGA) is a nearly invisible umbrella organization for 138 private foundations. Totally, these foundations fund hundreds of millions of dollars of projects through national and state environmental groups (including the Sierra Club, National Audubon, and Natural Resource Defense Council and many, many more) to implement their agenda.[44] It is said that this invisible, but very powerful group, literally sets the environmental agenda. What this group believes and says is usually manifested in action and policy.[45]

Although the EGA had been informally in existence for a number of years, it was formally created in 1989 when the Rockefeller Family Fund brought it under its 501-c3. The closed-door 1992 fall meeting was tape recorded for internal use, but several complete sets were purchased by non-foundation personnel before the mistake was recognized and further sales denied. Portions of the 36 hours of transcripts have been published in a variety of newsletters and books. Spoken in confidentiality, the comments expose the mind-set behind the biodiversity and sustainability issues.

Denis Hayes, new age counterculture activist in the 1960s and co-founder of Earth Day, is now president of the Bullitt Foundation. Bullitt sponsored $3.5 million on projects in 1992 alone. Hayes commented during the closed-door 1992 fall retreat of the Environmental Grantmakers Association that most foundations are staffed with 1960s activists.[46]

This ideology was supported by Ann Roberts, president of one of the numerous foundations represented at the 1992 EGA retreat. She traced the modern conservation movement back to mystics like Emerson, Thoreau, and others. She notes that the modern environmental movement is the result of the desire by many to return to their "European Celtic and Druid mystic roots."[47]

The current destruction of earth, Roberts asserted, is the result of America's treatment of nature as a commodity to be used up and not sustained. The *only* solution is to "treat the earth as sacred" and "understand that we are of the same composition as the earth." We "don't have to be at war with the earth," because at the subatomic level "there are no boundaries between me and this table, and because there are no boundaries we can at last understand in our inner being that with the natural world spirit can dwell within matter."[48]

With that type of thinking, members of the EGA tend to take a rather negative view of human civilization. Con Nuggent, Environmental Program Director for the Nathan Cummings Foundation affirmed this in defining the purpose of the EGA:

> We *start* with the premise...that the current *use of the earth by humans is unsustainable* and that the damage is done through billions of micro-economic behaviors and that stopping, modifying, or transforming those behaviors at any place along the economic spectrum from raw materials to the landfill, through law, or through culture is what we do in this business.[49] (Italics added)

Bill Devall, representing the IRA-HITI Foundation asserted that our economic system is "an absolute failure. It must be replaced with an ecologically based, ecocentric based value system." Ecocentrism — more commonly called biocentrism — is the philosophical equivalent of pantheism. A value system that would put nature before human need supposedly allows the hard choices that must be made to protect biodiversity and improve sustainability.[50] While an "ecocentric" value system sounds equitable, the practical application of this philosophy has been nihilistic[a] and ultimately prohibits man from doing anything.

If nature always comes first, then no law or regulation will ever be enough as long as man benefits at the expense of nature. It has become a game of progressively taking rights from humans to protect the rights of nature in the vague hope that we can somehow mystically live in sustainable "harmony" with her. Although adherents adamantly deny it, such philosophies merely define one extreme of the environmental controversy.[51]

This nihilism is apparent in the keynote address by Canadian zoology professor, activist, author, and public TV producer, David Suzuki. In his speech, Suzuki proclaimed that it is "raw arrogance to believe man, with our puny knowledge can manage complex ecosystems." Suzuki, decried our economic system, alleging that economics is pure folly and is a human "chauvinistic concept" that should be abandoned.[52] Suzuki then defined that his goal is to prove that our western culture is living in an unsustainable way:

> What I am involved in now is trying to establish the evidence that *we are living in a completely unsustainable* way...and there is no alternative but to begin to *rapidly decrease the consumption of our populations.* Now that is absolute anathema to the powers of our...respective countries, but until we begin to talk about limits to growth and *the need to* ***de**-develop* — and believe me, the major cutbacks will be easy.[53] (Italics added)

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[a] Nihilism is the evolving process whereby a philosophy eventually leads believers to the conclusion that the only solution to their perceived problem is the elimination of mankind.

But cutbacks and *de*-development are done by closing down industry and throwing people out of work which in turn causes the destruction of communities, and lives. During the 1992 EGA meeting, there was some discussion on how to help those people and communities who would suffer these losses. However, Donald Ross, the Secretariat of the Rockefeller Family Fund (which also provides the 501-c3 exemption for the EGA), nixed such ideas:

> If it means shutting a plant down, or it means stopping a pulp mill in Sitka or what have you, *that's what has to happen.... There are local communities that are going to go over the abyss* in the short run.... *It's gonna be either a different kind of economy or it's not gonna be there.* (Italics added)

Ross declared that *no* effort should be made to help people whose lives and communities are destroyed while creating this ecocentric social system. "It is a big, big mistake," he claims, "to even try."[54] Like the days of the counterculture movement, Ross and many of those who attended the EGA meeting describe their efforts in military terminology such as war, campaigns, battles and battlefields. Certainly not all members of the EGA believe in such radical ways, but none of the attendees challenged these speakers or comments. David Suzuki even got a standing ovation.

Remember, these are not your stereotypical radical extremists. The EGA is made up of the largest private foundations in America and spends hundreds of millions of dollars to implement their solutions for what they see as environmental destruction. EGA members financed the creation of the conservation law firms such as the World Wildlife Fund, Natural Resources Defense Council, the Sierra Club Legal Defense Fund, Environmental Defense Fund, Worldwatch Institute and dozens of others. Most of these organizations still receive massive funding from the EGA.[55]

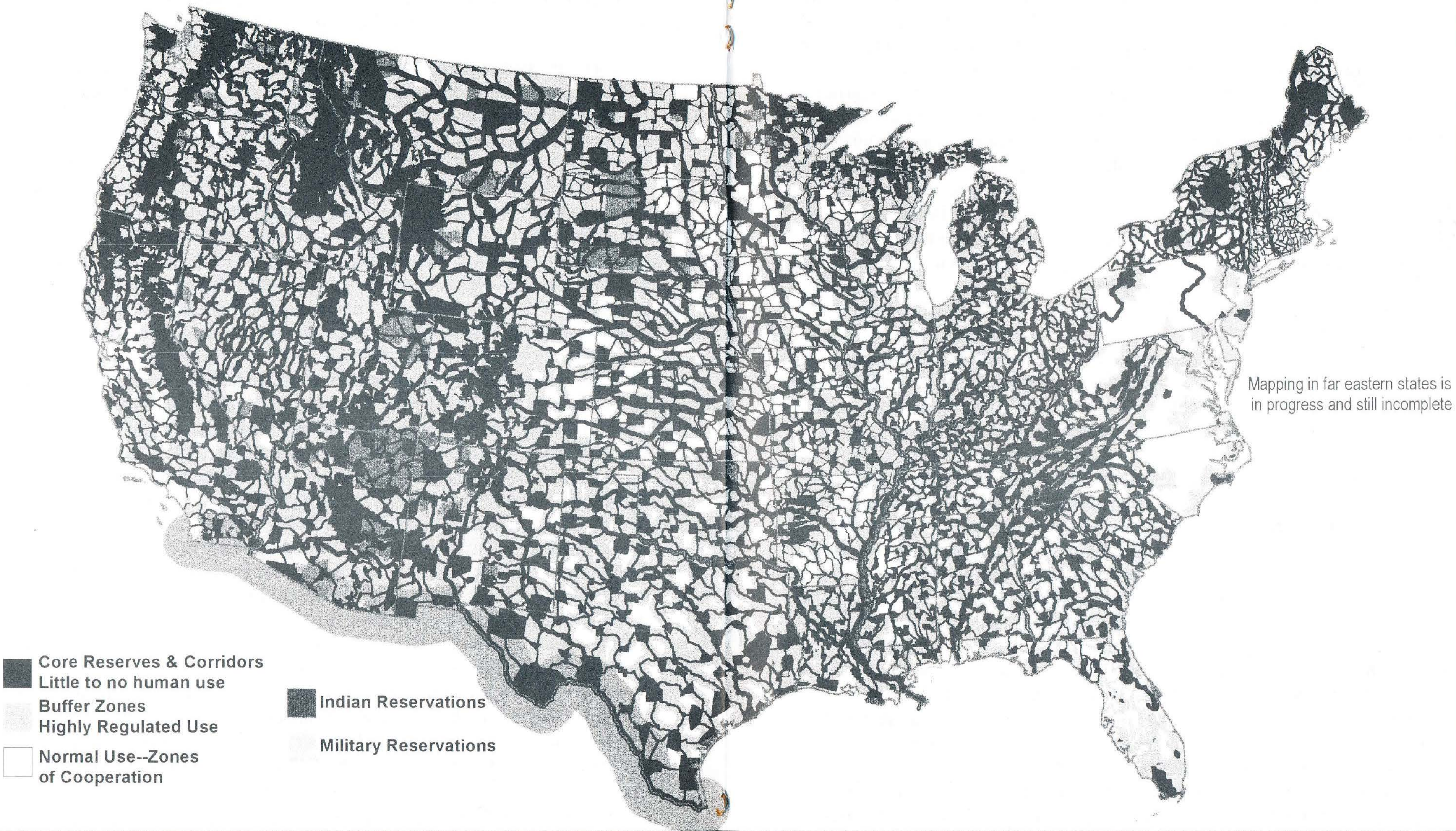
As noted earlier, the EGA funded the creation of the Society of Conservation Biology and its scientific journal. Reed Noss received $150,000 from Pew Charitable Trusts — one of the largest members of the EGA. The grant is "to support his efforts to organize grassroots conservation planning for the North American 'bioregions" identified as Wildlands priorities."[56]

EGA solutions to environmental problems include closing down or severely restricting the activities of factories, agriculture, golf courses, mining, commercial fishing, and forestry. In forestry, the agenda is now shifting from the Pacific Northwest to the Northern Rockies and the Northern Forest, which includes the forestland from Minnesota to Maine.[57]

The real power behind the EGA appears to be the Rockefeller family. They have been very active in supporting environmental activism in many ways, as is their prerogative. It is informative, however, that David Rockefeller was at one time affiliated with Lucis Trust — a major driving force behind the New Age movement.[58] In addition to housing the EGA under the Rockefeller Family Fund's 501-c3, both David and Laurence Rockefeller are among the who's-who on the Board of Directors of some of the most

Simulated Reserve and Corridor System to Protect Biodiversity

As Mandated by the Convention on Biological Diversity, The Wildlands Project, UN and US Man and Biosphere Program, and Various UN, and US Heritage Programs



Representations of a reserve and corridor system to protect biodiversity in the United States. Based on the guidelines of the Wildlands Project. Article 8a-e of the Convention on biological Diversity Treaty provides the legal framework for this plan. Section 13.4.2.2.3 of the United Nations Global Biodiversity Assessment (GBA) that will be used to define the enabling and enforcement protocol for the treaty specifically calls for the Wildlands Project to provide the plan's conceptual framework in which 30-50 percent of the US land area would be in wilderness reserves. According to the June 25, 1993 issue of Science magazine, the plan calls for 23.4% of the land to be put into wilderness and 26.2% into corridors and human buffer zones. Such a system of reserves and corridors, notes Science, would create "an archipelago of human-inhabited islands surrounded by natural areas." According to the GBA, reserves would include wilderness areas and national parks while inner buffer zones would permit no agriculture, no more than 0.5 miles of road per square mile of land, primitive camping, and only light selection harvesting of forests. (See "The Wildlands Project", Wild Earth, December, 1992. Also see Science, "The High Cost of Biodiversity," 25 June, Vol 260, 1993, pp 1868-1871. Colored versions of an earlier version of this map were introduced on the US Senate floor and stopped the ratification process. See Congressional Record S 13790, September 30, 1994. Full color regional and USA maps can be purchased from EPI by calling (207) 945-9878.

prestigious environmental organizations in America. Laurence Rockefeller, through the Rockefeller Brothers Fund, provides funding resource for a slew of environmental groups.[59]

In 1990 the *New York Times* reported that the Rockefeller Foundation provided a whopping $50 million grant to its Global Environmental Program. The objective of the grant was to "encourage efforts to build environmental protection into government's long-range economic planning...and to promote the drafting of international treaties to deal with forest, land and water preservation..."[60] Two years later the United States signed the Global Warming Treaty, Agenda 21, and the Sustainable Development Accord at the Earth Summit. The Convention on Biological Diversity Treaty was signed by President Clinton in 1993, but as discussed earlier, has not been ratified by the U.S. Senate as required by the United States Constitution.

Maurice Strong, a close friend of David Rockefeller, is one of the key movers and shakers on the Board of Directors of the Rockefeller Foundation. Strong was vice president of the WWF until 1975 and Director General of the IUCN in the early 1970s.[61]

The IUCN and Maurice Strong

The IUCN is a United Nations affiliated organization created in 1946 to to advise the UN on scientific issues. It was revitalized in 1972 by the United Nations Environmental Programme, UNESCO, and WWF under the direction of multimillionaire Maurice Strong, a Canadian industrialist. Strong was the principle mover behind the creation of UNEP, and continues to influence both UNEP and IUCN policies.[62] He created and presided as Secretary General over the June 1992 United Nations Conference on the Environment, popularly called the Earth Summit.

The IUCN is comprised of two Houses. The first is made up of 300 government and governmental agencies. The second consists of 600 environmental groups and other NGO organizations that dominate IUCN policy. The current purpose of the IUCN is to create "a new ethic, embracing plants and animals as well as people, an ethic that would ensure sustainable development...that affirms *biocentric*...values."[63] (Italics added) The Spring 1996 issue of the IUCN's Ethics Working Group's publication, *Earth Ethics* blatantly admits that the IUCN, "promotes alternative models for sustainable communities and lifestyles, based in ecospiritual practice and principles...to accelerate our transition to a just and sustainable future.... The problems that face the world today, humanity must undergo a radical change in its attitudes, values, and behavior.... In response to this situation, a new global ethics is taking form, and it is finding expression in international law."

What is especially concerning is that the IUCN provides a forum for various federal agencies and NGOs to work together without outside scrutiny to develop joint strategies on how to implement their religious beliefs through international law. Hence, the US EPA, US Fish & Wildlife Service, US Park Service, US Forest Service and the National Oceanic and Atmospheric

Administration (NOAA) can work side by side out of the public's eye with the Society of Conservation Biology, Sierra Club, Nature Conservancy, National Wildlife Federation, National Audubon Society, Natural Resources Defense Council and the Environmental Defense Fund to develop strategies to implement a global agenda that has little to do with protecting the environment and everything to do with controlling the lives of every citizen of the world.

Our federal agencies and environmental groups then implement international policy without any congressional oversight. For instance, an EPA Internal Working Document clearly states, "Natural resource and environmental agencies... should...develop a joint strategy to help the United States fulfill its existing international obligations (e.g. Convention on Biological Diversity, Agenda 21).... The executive branch should direct federal agencies to evaluate national policies...in light of international policies and obligations, and to amend national policies to achieve international objectives."[64] In short, federal agencies are promulgating regulations without legislation, while environmental organizations lobby and distribute propaganda to convince the citizenry that these global programs must be implemented to save the world.

In addition to redirecting the mission of the IUCN, Maurice Strong is one of the most powerful New Age gurus in the world. He is a member of the New Age Club of Rome, director of finance for the highly radical New Age environmental think-tank, the Lindisfarne Association, and one of the founders of the New Age Planetary Citizens. His "Baca Grande" ranch in Colorado, called "The Valley of the Refuge of World Truths" is *the* global New Age Mecca, complete with monasteries, devotees of the Vedic mother goddess, shamans, Zen Buddhists and a Temple to the Sun God.[65]

Such a worldview has far reaching effects when held by men with as much influence as Strong. In his opening remarks at the Earth Summit Strong warned "It is the responsibility of each human being today to choose between the force of darkness and the force of light. We must therefore transform our attitudes and values, and adopt a renewed respect for the *superior laws of Divine Nature.*" (Italics added).

The combination of the IUCN, WRI, WWF, EGA, Maurice Strong, the Rockefeller's and others of like mind have been largely responsible for the sudden appearance of biodiversity and sustainability into mainstream politics and science. Contrary to popular thinking, these concepts did not arise from a broad scientific consensus, but rather from a heavily funded small group of influential individuals and institutions promoting theories based on their nature beliefs.

THE SCIENCE AND PRINCIPLES OF BIODIVERSITY

Most scientists conducting research into conservation biology theories are unaware of the deeper esoteric (secret) agenda. These scientists merely study the theories to determine if they correctly define ecosystem interactions. They are truly attempting to define cause and effect relationships — if any — of these concepts using the scientific method. Biodiversity heads the list.

It is extremely important to realize that while some theories of biodiversity and conservation biology are rooted in some amazing theology, this fact does not negate the possibility that some may be true. That is what science is all about. In fact, conservation biology offers some excellent *theories* for the scientific method to test.

Since the conceptual framework of conservation biology is based in systems science, it is potentially quite valuable for this purpose. This does not mean that conservation biology *theories* are correct. Rather, they merely provide good starting points for scientists to begin looking for cause and effect relationships within and between ecosystems. Holistic Resource Management (HRM) appears to be a bright spot in this effort. Developed in Africa by Dr. Allan Savory, HRM first looks at management goals and then how succession, the water cycle, mineral cycle and energy flow can be managed using fire, logging, grazing, rest, animal impact, other living organisms and technology as tools to achieve the goals.[66]

In applying HRM, hard science is used to define the critical relationships involved in entire ecosystems. This complexity is then reduced to a straightforward, but regimented, management plan. Although the techniques are not yet perfected, spectacular results have apparently been obtained. In many cases the management plan requires the number of cattle or level of harvesting be *increased* in order to improve ecosystem health. Had the preservationist "solutions" demanded by the IUCN, WWI, and WWF for the Convention on Biological Diversity treaty been applied in those situations, vast ecological destruction could have resulted.

Biodiversity is difficult to define (in fact it hasn't been) and even harder to measure. For instance, some conservation biologists argue that monotypes like loblolly pine in southern forests reduce diversity, and therefore reduce sustainability. Roads, clearcutting, and other unnatural treatment of the forest create fragmentation which supposedly reduces sustainability. That's how the theory goes. But are they correct? It depends on how it is measured!

The biggest question feeding the legitimate biodiversity debate centers on cumulative effects. For instance, these so-called monotypes could supply valuable habitat for some unique species. They therefore can enhance diversity over a large landscape of 20 to 30 thousand acres. But diversity would decline dramatically if all 20 to 30 thousand acres were red pine and aspen stands.

Historically, science has studied small components of ecosystems on a stand by stand basis. A ***stand*** is an area of dominant vegetation (usually trees) having similar species composition and age class distributions. They can range in size from a few acres to several hundred acres. To resolve cumulative effects questions scientists no longer could look at monotypes on only a stand by stand basis. Instead, they needed to look at the entire landscape of many thousands of acres — or a *systems* basis. A landscape is normally between 10,000 and 500,000 acres, up to a million acres in size and comprises hundreds or thousands of stands. Its boundaries are usually defined by some natural feature, like watersheds.

In contrast to stands or landscapes, a forest ecosystem is a community of plants, animals, and microorganisms, and the physical environment they inhabit, in which trees are the dominant life form.[67] Ecosystems can range in size from a half acre wetland within a stand to the entire earth. They also change with time. Any community is dynamic and changes with climate change, soil maturation, disturbance and succession.

Obviously, the ecosystems that existed following the glacial retreat some 11,000 years ago were considerably different from those existing in the northern forest today. Likewise, ecosystems changed following the heavy cutting and fires at the turn of the century, which created far more aspen and birch dominated ecosystems than existed prior to disturbance. Once again, these ecosystems are changing as the aspen and birch ecosystems are replaced via what is termed succession by the species that once dominated a particular site. This is normal, and clearly illustrates that ecosystems are always in dynamic change due to disturbance or climatic variations.

Conceptually, ecosystems help define what processes are involved within the size of system chosen. But they also can result in tremendous confusion unless the time/space limits are defined. It is therefore important in discussing ecosystems that they are fully defined.

Theoretically, the more diversity ecosystems contain, the more robust they become, and the more resistant they are to cataclysmic events. But diversity is also hard to define, and unless you are aware of the kinds of diversity that exist, you will be unable to separate fact from fiction.

Three Types of Diversity

Biological diversity can be defined as the diversity of life in all its forms and levels of organization: animals, plants, and microorganisms are the three major forms; genes, species, communities, and biomass (amount of organic material) are among the many levels of organization.[68]

There are three types of diversity. Alpha diversity includes all of the species sharing the same habitat. Beta diversity describes the species between habitats — i.e. upland vs. wetland. Gamma diversity describes the diversity geographically — i.e. northern, mid, and southern Wisconsin. There is a basic assumption that the most efficient way to maintain biological diversity in a range, savannah or forested landscape is to have a diverse array of stands and thus ecosystems and constituent species.[69]

An easier way of looking at these three types of diversity is by thinking of stands and forests. The *first, and simplest type of diversity*, is the number of species *within* a stand. This is a measure of *species richness*. The more species the more diversity. But the simple number of species begs the question of whether a few species dominate the habitat, or if many or most of the species share equally the habitat resources. The greater the equality, the theory goes, the more balanced the diversity. (Figure 2)

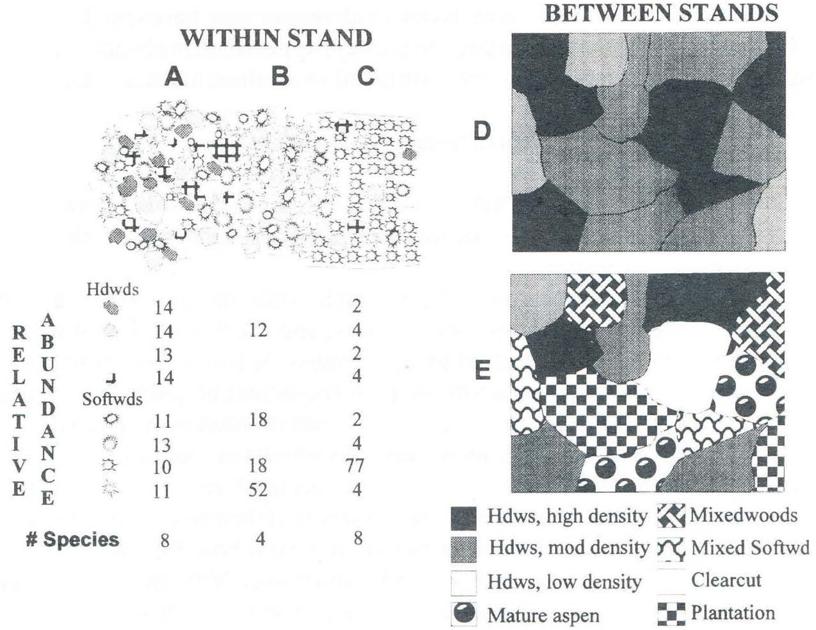
Also important is whether these species are extremely common or rare in other ecosystems. Certainly ecosystems having 150 species are more diverse than those having 50. But if those 150 species were found everywhere, the diversity of that ecosystem would not be as significant as another ecosystem having 100 species, but which includes species unique to that type of ecosystem. And so on.

Besides species composition, this first form of diversity includes vertical and horizontal structural diversity. A Douglas-fir plantation in the Northwest having a single canopy is not as diverse as a natural Sitka or Engelmann spruce stand having many age classes and therefore vertical structure. In the same manner, if there were maple, birch, hemlock and other tree species along with the multi-aged spruce, diversity is even higher. Finally, if there were holes in the canopy allowing grass, forbs, and shrubs to develop, diversity is higher still. Holes are normally formed by the death or windthrow of trees leaving standing snags and woody debris on the ground as habitat for many other species.

The second type of diversity is spatial diversity *between* stands. It reflects how different ecosystems are organized spatially in relation to each other within some predetermined area. Usually it is within a 10,000 to 200,000 acre landscape. Although spatial diversity certainly exists within stands, stand diversity is typically called horizontal structural diversity (see above). Spatial diversity on a landscape basis is the size, number, and organization of forest stands relative to each other. The more components that differ between stands the higher the diversity. Many stands of differing age classes, structures and species compositions are more diverse than stands that are the same in all respect except for age class.

This highlights a critically important type of diversity. The dominant forest type in northern Wisconsin, for instance, is northern hardwood. Some conservation biologists and environmentalists maintain that biodiversity in these northern hardwoods can be only be optimized in uneven-aged, long rotations having much old-growth. Even if *within-stand* species composition and structural diversity could be optimized using this approach (it is not), *between-stand* beta diversity would be minimized! Twenty thousand acres of old-growth, uneven-aged northern hardwoods would reduce biodiversity. At the same time, while red pine plantations have low species composition and structural diversity within each plantation, it may add critical habitat at the landscape level that improves spatial biodiversity at the landscape level. (Figure 2, next page)

This is but one reason why it is very important to understand the principles of biodiversity. Some conservation biologists and environmentalists will argue their point using any one of the three types of diversity, knowing that others haven't got a clue that they have a very weak argument. In the northern forest, for instance, stands of aspen, birch, and pine are important compon-



RELATIVE ABUNDANCE		A	B	C
Hdwds				
	●	14		2
	○	14	12	4
		13		2
	┘	14		4
Softwds				
	✿	11	18	2
	✺	13		4
	✱	10	18	77
	✳	11	52	4
# Species		8	4	8

Figure 2. Stands A and C (a plantation) have the same species richness, but species abundance in stand A is far more equal than C, therefore providing greater within stand diversity. Although stand B is also dominated by a single species, it has fewer species and therefore less species richness than plantation C. Contrary to popular belief, most plantations often do not have reduced species richness; merely a shift in populations. Ironically, high within stand diversity does not automatically mean high between stand diversity. Even though in this hypothetical example all the stands in D have high within stand diversity there is much less diversity in the D landscape than that of E, because all stands in D are similar to each other. This is true even though some of the stands in E are plantations or clearcuts.

entsof landscape diversity. Just because their *within-stand* diversity may be low is no reason to discriminate against them. The same is true for age classes.

Even-aged management often reduces *within-stand* diversity, but adds essential diversity at the landscape level. Some landscapes could even require even-aged management — even clearcutting — to enhance beta diversity over the landscape. The question then becomes "how much" clearcutting verses selection harvesting. How much loblolly pine in the south or Douglas-fir in the northwest can be allowed and so forth. This will be discussed in greater detail in the "Application of Biodiversity" subsection on page 24.

The *third type of diversity* is similar to the second, except it is the diversity of landscapes. It is at this level that global analyses and planning can occur.

These three types of diversity cover the essentials required at this point. Just remember that these three types of diversity can be expanded into a

Just remember that these three types of diversity can be expanded into a book-length discussion of size, frequency, type of disturbance of forest stands, and how these stands are positioned in relation to each other.

Measurement of Diversity

The measurement of biodiversity is as ambiguous as its definition. There is no one accepted way of measuring it. Rather, it depends on what the investigator wants to emphasize.

All methods of measurement depend on a minimum of two factors—the number of species present (species richness) and the distribution of individuals among the species, referred to as evenness. A community is said to be completely even when the proportion of each species compared to each other species is equal. There are two primary methods of measuring diversity. One is called Shannon's diversity index and the other Simpson's index.[b] Those involved or affected by policy issues surrounding diversity will hear these expressions used, and while it is not necessary that they be expert in their use, it may be important for some readers to understand how they work.[70]

These indices work reasonably well for most uses. Various attempts have been made to introduce evenness/dominance factors to weight the evenness of the species distribution. Other efforts have been made to introduce terms giving higher weight to rare species, but result in obvious bias.

Application of Biodiversity

As noted earlier, these conservation biology and biodiversity theories were initially based on the premise "nature-knows-best." Malcom Hunter, in his textbook *Wildlife, Forests, and Forestry* makes the statement "trees and other plants and animals that comprise a forest ecosystem are not a random set of organisms; they live together on a site because they are adapted both to the site's physical environmental and to living with one another. When people manipulate this situation, by changing the trees species composition of a stand, there are likely to be undesirable consequences for many species of wildlife."[71]

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[b] Shannon's index is $H' = - p_i \log(p_i)$
where p is the proportional abundance of species i to the total number of individuals of all species. Shannon's index was developed from information theory. Its measure of rarity of species i, $-\log(p_i)$, reflects the degree of uncertainty of the identity of an individual chosen at random from a community. Shannon's index seems to meet most of the criteria expected in a diversity index.

Simpson's index is $D_{s\ i}(1 - p_i) = 1 - p_i^2$
and uses $(1 - p_i)$ as the measure of rarity of species i. D_s is the probability that two individuals, chosen at random from the community, will be of different species. Although it is used as an index of diversity, Simpson's index does not always equal the sum of its parts. However, it is still frequently used.

This, of course, is true. If a mature stand is clearcut, most species living in the habitats created by the prior stand will no longer find appropriate habitat in the young stand. There will be a sharp shift in species populations. But that is neither good nor bad. What is undesirable for one may be desirable for another. Yet, such claims are made by some to imply that anything man does is not natural and is therefore undesirable. That is strictly a *value judgment* . There is no evidence that it is "bad" other than someone said so based on their own personal prejudices.

Nature Knows Best?

Regardless of its validity, this theory provides the basis in the ongoing debates for what is best for the forest. For instance, natural disturbance creates successional patterns normally having predictable sizes, patterns, and species composition. Such disturbance enhances biodiversity and to some extent can be duplicated by forest harvesting.[72] Yet the theory also assumes that the "best" diversity will be found in those landscapes that essentially duplicate the successional/spatial relationships of nature herself. The theory claims that species composition and stand size/distribution resulting from natural disturbances such as windthrow, fire, flooding, etc. provide the best matrix for diversity.

Until solid research validates this hypothesis, this *remains strictly a value judgment.* Piggy-backed on this theory is the hypothesis that since presettlement forests had a lot of old, mature stands of large size, then we must use this presettlement scenario as the template to recreate the modern forest in that image. Anything less than this results in loss of sustainability.

There is no evidence to validate the hypothesis that nature's way is the best way. Best for what? If one species is favored, another is inevitably discriminated against. According to this hypothesis the polio and smallpox vaccines should never have been developed. All medical science should be abandoned, because it favors humans over other species. But that is exactly the point Arne Naess above is trying to make — people are not natural and consequently have to reduce their populations for the good of the rest of nature.

That is why biocentrism and the earth-centered view of conservation biology are so nihilistic. Nature always comes first. No matter how many sacrifices mankind makes to create more "natural" ecosystems, it will never be enough. It can't be as long as man-altered ecosystems are not natural. And they can't be natural with man influencing their processes.

These nihilistic hypotheses don't have to dominate conservation biology. In fact the vast majority of scientists, including many conservation biologists, believe that systems science can reveal how we can better manage our ecosystems without jeopardizing critical ecosystem functions.

What Science Is Showing

As noted earlier, conservation biology theories of gene exchange, and the need for reserves and corridors remain unproven and reported observations are ambiguous.[73] In fact, contrary to original theory, most recent research is showing that forest fragmentation, especially fragmentation caused by even-aged management regimes may not reduce genetic exchange and biodiversity, nor increase the probability of extinction.

For example, a forty-year harvesting study on the Argonne Experimental Forest on the Nicolet National Forest in Wisconsin has clearly shown that diversity increases in the new forest after heavy cutting. This research revealed that Shannon's diversity index *declined* from 0.13 to 0.08 after forty years in stands that were not harvested. On the other hand, heavy selection, shelterwood, and clearcutting caused dramatically *increased* diversity—from 0.11 before harvest, to 0.35, 0.44, and 0.47 respectively in the new forest forty years later.[74] This represents an increase of *400 to 800 percent* of "within stand diversity" (alpha diversity) over those stands that were not cut.

Similar results were found during a twenty-year period following clearcutting in central New York.[75] Both these and other studies clearly illustrate that by allowing the forest to proceed back to maturity, diversity is *reduced* rather than increased—just the opposite of what conservation biology theory predicts. Moderate to heavy harvesting, on the other hand, resulted in a dramatic *increase* in diversity.

Trees represent just one component of diversity. There are also shrubs, grasses, forbs, birds, mammals, amphibians, invertebrates and other life forms which make up the diversity matrix. Research is just now beginning to show similar increases in diversity following forest management activities for these species as well. Why shouldn't they? The vertical and horizontal structure of forest trees have a heavy influence on the type of habitats created for other species. And harvesting can improve vertical and horizontal structure.

One of the primary concerns to conservation biologists is songbirds — more specifically Neotropical migratory birds. These are birds that migrate to central or south America each winter and return to north America to nest in the spring. Although many are nondescript, others, like the scarlet tanager, number among our most colorful birds. Numerous studies over the past decade have shown populations of these birds to be in serious decline.

Speculation and accusations have been made that the decline may be caused by either tropical deforestation in their winter habitat, fragmentation in their summer nesting ground, or both. Some environmentalists were beginning to say that all harvesting of our northern forests should be stopped until the effects of forest fragmentation on these species could be determined. But current science is showing these types of knee-jerk reactions to be premature.

Emerging Scientific Results

A series of avian population studies from 1949 to 1980 made in a 100-acre woodlot in central New York revealed stunning results. Declining Neotropical migratory bird populations were likely caused, not by fragmentation, but by the regrowth of mature forests following fragmentation some 50 years earlier! In other words, the decline may be caused by a *loss* of fragmentation.

In this research, bird breeding populations on the 100-acre block, a classic forest fragment, were censused and compared to vegetative habitat in 1949-1950 and 1979-1980. The unusual thing about this study is an additional 17 censuses were conducted between 1957 and 1974.[76]

Population declines or local extinction's occurred in 10 Neotropical migrant species between 1949 and 1980. Thomas Litwin and Charles Smith, the authors of this unique long-term study, note that "the most widely accepted explanation for the patterns observed is increasing habitat fragmentation and isolation." From this, the authors continue, it may be "concluded that some Neotropical migrant, forest-interior bird species are area sensitive and may not be able to maintain viable nesting populations in fragments below a certain size . . . These conclusions have contributed to the development of a series of strategies for establishing and managing refuges with the goal of preserving area-sensitive species."[77] But these conclusions, Litwin and Smith found, were wrong.

Most avian studies represent short time period sampling. The 1949-1950 and 1979-1980 censuses are typical. If only those two samples were taken, "one might assume there is a high degree of instability within . . . the breeding bird community."[78] But the 17 intermediate censuses showed that "both species richness and density estimates fluctuated within an expected range, . . . and all of the species that became locally extinct between 1949 and 1980 [were] sporadic nesters with very small populations. What was occurring between 1950 and 1980 was 'crypto turnover,' the process of repeated colonizations and extinctions."[79] In other words, these species came and went, and their absence in any one given census was no cause for alarm! *But all one-shot censuses miss this phenomenon. There is no continuous census to reveal that the periodic "extinctions" may be merely a normal pattern of irregular nesting — not extinction.*

This however, did not explain why this pattern of irregular nesting occurred, nor why there was a decline in some species that were otherwise consistent nesters. Litwin and Smith emphasize that it is unlikely that small-scale disturbances caused either the irregular nesting, or the decline in population in some species. Instead, these observations were highly correlated with natural successional relationships following the substantial disturbances earlier in the century. With only one exception, all periodically extinct species were those that preferred early successional "habitats with dense ground cover and moderate to dense understories associated with open woodlands, woodland edges, abandoned agricultural land and young clearcuts."[80]

Diversity was lost as early successional ecosystems — created by fragmentation — matured. In 1950 there were still significant numbers of these early successional stands in the study area. But with "continued maturation, those patches declined, reducing the horizontal and vertical heterogeneity of the woods."[81] As their habitat became unfavorable, early successional, irregular nesters dropped out. The decline of some regular nesters resulted from successional maturation "causing the loss of both vertical and horizontal structural heterogeneity; and the overall productivity declines associated with forest maturation."[82]

In yet another research study, one of the largest Neotropical migratory bird investigations to date has concluded its second year in Maine. This huge study samples a variety of industrial landscapes — from those having no harvesting to those having nearly 80 percent clearcut over the past 40 years. Simpson's diversity index for mature forests averaged 0.91, while those for intermediate aged forests averaged 0.93. Residual stands following partial harvesting averaged 0.95. Only freshly harvested clearcuts (less than three years of age) showed a decline. But even that harsh treatment produced a diversity of .885. Regeneration (up to 20 years) following clearcutting had a Simpson's index of 0.93—more than mature stands.

First year results of this study found that "regional avian diversity is likely enhanced by industrial forest practices that maintain a variety of successional stages of forest."[83] As would be expected, major species population shifts were found between uncut forested landscapes and those receiving varying intensities of clearcutting. In essence, avian diversity increased because of the increase of *within* and *between* forest stand diversity resulting from clearcutting and forest regrowth.

Even the older second-growth stands in the 70 to 80 percent clearcut landscape were beginning to provide the stand structure found in older stands. Because they were harvested over a 40 year period, they contained a variety of age classes and species compositions that acted to enhance diversity. Although the authors caution there may still be negative fragmentation effects on critical species, no such evidence was apparent the first year. In fact the authors suggest that very large "rolling clearcuts" may provide the optimal habitat requirements for these avian species.[84]

What these studies have clearly shown is that the mosaic arrangement of stands in a landscape and their internal vertical and horizontal structures are *the* factors of critical importance. This will likely be the case in other major ecosystemtypes as well. Whether so-called "natural processes" were occurring, or whether there was "old growth" in these stands has little to do with optimizing diversity. In fact, *valuable and potentially threatened species were being lost or in decline because natural processes leading to old-growth was occurring!*

In another study in New Hampshire managed stands having small clearcuts of roughly 10 acres in size were compared to uncut reserves. Those forest areas that were clearcut contained *every* one of the 33 species found in comparable reserves where no harvesting occurred. Not only was there no reduction in the populations of those 33 species, but the managed stands had 20 additional species — 11 of which were declining in the region. Not surprisingly, these 11 were "primarily associated with early successional habitats."[85]

Stand structure and landscape diversity are by far the dominant factors in determining avian sustainability, not the age or how "natural" the forest may be compared to pre-settlement conditions. Species composition (especially between the hardwoods and conifers) plays an important role within these two dominant factors.

Harvesting with traditional forest silviculture practices can create far more biodiversity than can nature itself. This can be the only reason that explains why, for instance, the spotted owl in the northwest has its highest populations, not in "ancient forests," but on 400,000 acres of land owned by the Simpson Timber Company where only 2 percent is old growth forest.[86]

Another charge often leveled by some conservation biologists and environmentalists is that harvesting—and resulting fragmentation—of the northern forest is contributing to the decline of the pine marten. Some environmentalists even compare the marten to the northern spotted owl, which they claim depends on old-growth forests in the Pacific Northwest for survival.[87]

Yet, another study in Maine using telemetry to track the martens are showing the marten prefers any mixed hardwood/softwood forests over 20 feet high. Although the study is not yet complete, research scientist Dr. Dan Harrison believes "it would be premature to make policy decisions that would restrict timber harvesting . . . Martens have raised litters in areas that include less than 3 percent old-growth forest."[88]

A study of an industrial landscape of 20,000 acres in the Upper Peninsula, near Iron River, Michigan seems to be showing similar results. A habitat and diet analysis for Neotropical migrant songbirds shows all requirements are found within the landscape—in spite of the fact that a portion of the landscape has been converted to red pine plantations. Also, concurrent studies of streamside buffer requirements show no significant difference in stream sedimentation and aquatic life whether the buffer is 50, 100, or 100 feet wide when compared to uncut portions of the Fence River.[89] Clearcutting is not adversely affecting these ecosystems if done correctly.

Stand structure and stand distribution in landscapes has repeatedly been shown to be the most important factor in biodiversity and sustainability. Harvesting, especially heavy harvesting improves landscape biodiversity as long as the majority of the stands in the landscape are out of the sapling stage of development and the harvesting occurs over a sufficient period that the oldest stands approximate the *structure* of mature forests.

The need for a massive reserve system to provide old-growth forests to optimize biodiversity in natural ecosystems is being refuted by ongoing research. Even the need for a small proportion of the landscape to be in mature stands has yet to be demonstrated, although it is more defensible than the need for large reserves.

CONCLUSIONS

The use of biodiversity and conservation biology in today's policy formulation is based more on a well funded political agenda than on science. Tens of thousands of lives across America are being negatively affected by laws, regulation, and litigation formulated around its "nature-is-god" principles. Yet this is apparently only the beginning. Some conservation biologists demand even more draconian laws and regulations that will affect every American, and threaten the very foundations of our society and economy. Unproven theory has already found its way into law and international treaty.

Although most theories of conservation biology and biodiversity are based more on myth and religious beliefs about the nature of god, some may eventually prove to be correct. The growing success of Holistic Resource Management appears to be a case in point. And certainly, no one argues to need to protect biodiversity. The question is how and at what human cost. And that will only come with research and hard science that prove, modify, or disprove the theories upon which they are based.

The process of finding scientifically defensible solutions to the biodiversity issue will be a long and arduous road. Nonetheless, we must move ahead. We must continuously endeavor to find the best way to manage and use our forests and other natural resources. But in this process, we must also balance the uncertainties of this emerging science with the need to protect the lives and culture of those who use and depend on natural resources for their livelihood.

Values play a needed and important role in shaping policy from unbiased research results. But they have no place in *shaping* scientific research results. Scientists especially must take care to be as factual as possible when reporting results of research. If scientists allow their "philosophy of life" to bias their results — as suggested by Arne Naess in his concluding remarks in the textbook *Conservation Biology* (see page 10) — then science becomes no better than myth. And no society in history has long survived once policy began to be based on myth.

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More information on this subject can be obtained Dr. Coffman's book, *Saviors of the Earth? The Politics and Religion of Environmentalism*, Northfield Publishing, Chicago. ISBN No. 1-881273-27-X. $17.50 plus tax where applicable. Shipping is included in price.

For information on how this environmental agenda is impacting our US Constitution, and fundamental freedoms by returning us to a "ruler/feudal" form of government despised by our Founding Fathers obtain Dr. Coffman's pamphlet *The Decline of Property Rights and Freedom in America.* Environmental Perspectives, Inc. 49 pages. $6.25 plus tax where applicable. Shipping is included in price.

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About the Pamphlet

Have you ever wondered why and how overnight biodiversity has become the standard upon which all US natural resource policy is now formulated? Have you ever stopped to think what all these new laws and international agreements are going to do to America? To you personally? Did you ever think there may be an enormous agenda behind all the policies to protect biodiversity that may actually reduce biodiversity?

This pamphlet explores the radical philosophy driving this agenda and the enormous funding and political muscle that has made it front page headlines and law so quickly. It describes how a treaty that would have locked up to half of America into wilderness and provided the legal framework to drastically reduce our standard of living was stopped in the U.S. Senate an hour before the cloture vote was to be taken. The pamphlet details the false science promoting the biodiversity agenda and provides hard evidence that good management of our resources actually promotes biodiversity and ecosystem health. It illustrates how "preserving" resources can actually reduce biodiversity.

About the Author

Dr. Michael S. Coffman is a respected scientist and ecologist who has been involved in ecosystem research for twenty-five years in both academia and industry. He taught courses and conducted research in forest ecology and forest community dynamics and has published a book on forest ecosystem classification in Upper Michigan and Northern Wisconsin, which has become the standard for classification in the region. He also assisted the U.S. Forest Service in developing an Ecological Land Classification System for each of the National Forests in Region-9.

Until recently Dr. Coffman was a manager for a leading forest and paper products company in the United States. During this tenure chaired a multimillion dollar research effort into impacts of man on our nation's forests. In this, and other related responsibilities, he became intimately involved in such national and international issues as acid rain, global climate change, wetlands, cumulative effects and biological diversity.

Dr. Coffman is currently President of Environmental Perspectives, Inc., where he provides professional guidance and training in environmental problems and conflicts so that appropriate solutions can be developed. He has served on two select U.S. Forest Service Region 9 Roundtable's on biodiversity and socioeconomic issues--the only scientist to serve on both. He also successfully led the effort to stop the ratification of Convention on Biological Diversity Treaty in the United States Senate described in this bulletin.